CORRESPONDENCE

THE HEAT MECHANICS OF THE WATERS CANISTER

Sir,—May I reply as briefly as possible to Dr. Dunkin's constructive, but not entirely valid, criticisms in his letter in this Journal (April 1959).

I agree that if the operating theatre temperature is very high the temperature of the inspired gases may rise as much as five degrees centigrade above body temperature, and I think that this is more likely to occur in this country than in tropical climes, where the operating theatre is usually air-conditioned and is, therefore, often the coolest part of the hospital.

The highest temperature recorded in my clinical cases for inspired gases was 104°F (40°C) at a theatre temperature of 73°F (23°C).

As regards the work of Clark et al. (1954) on Body Temperature in Anaesthetized Man, their measurements of gas temperatures are unhelpful because inspired and expired gas streams were not separated at any point in the to-and-fro system; therefore, unless a temperature recording apparatus of very short time constant was used (and this was not so), any temperature recorded would be a mixture of that of the inspired and that of the expired gases. This is well illustrated in their figure 6; the temperature recorded in the inspiratory limb of the circle system was 89°F (32°C) at the Y-junction, whereas that recorded at the tip of the endotracheal catheter was 97°F (36°C).

They also state specifically: "The results of this study indicate that above this temperature" (viz. operating room wet-bulb reading of 75°F (24°C)) "body temperature tends to rise substantially during prolonged operations regardless of the anaesthesia system" (my italics).

My statement that "no evidence has been found to suggest that the presence of a hot canister near the patient is in any way harmful" refers to the work described in my paper, and is entirely accurate; nor have I, as I mentioned in the preamble to the paper, been able to find in the literature any good evidence of harmful effects. I agree that it would be very interesting to study ciliary movements and bronchial dynamics, and perhaps someone with access to laboratory and animal facilities will undertake this.

As regards efficiency of carbon dioxide absorption, the experimental work was controlled to ensure total absorption. In the clinical cases there was no evidence that absorption was in any way incomplete. We do, in fact, use a pot scrub routinely to eliminate channelling as recommended by Robson and Pask (1954). Another efficient method is to incorporate a spring into the canister, which produces a similar steady compression of the granules, as used by Samson (1957) in Johannesburg.

In conclusion, I feel that to criticize the carbon dioxide absorption system for the elevation of body temperature, which not infrequently occurs during surgery in hot and humid operating conditions, is comparable with driving a motor car with the radiator blind drawn up through the steaming jungles of the Amazon, and then blaming the carburettor or the exhaust system for the overheating which will inevitably result.

J. C. AINLEY-WALKER,
Queen Elizabeth Hospital,
Birmingham

REFERENCES


Sir,—I should like to take this opportunity of thanking Dr. Ainley-Walker for replying to my queries concerning his work on the Waters canister. His letter has cleared up some doubtful points. The jungle simile presents an intriguing picture and, of course, I agree that the "can" is but a minor factor in heat retention.

In fairness to the balanced view presented by Clark et al. (1954) I think that the quotation
which he gives from their article may be a little out of context. It continues in the next paragraph: "Above this temperature (75°F (24°C) wet bulb) heat retention is much more frequent when the to-and-fro system is used than when the circle or non-rebreathing techniques are employed."

The time factor of their temperature recording apparatus did mean that the readings were an average between inspiration and expiration and hence even greater intratracheal temperatures may have occurred than the maximum of 108°F (42°C) quoted when using the Waters canister. It would be helpful to know what the upper limits of this figure might be.

While questioning the effects of hot gas on the trachea and bronchi I did not wish to impute the accuracy of Dr. Ainley-Walker's observations; indeed it is the common clinical experience of most of us who use the canister that the procedure is apparently quite innocuous. In view of the scarcity of literature on the subject, I thought the notion of possible benefit to the patient required some clarification as to what he had observed in this respect when the inspired gas temperature was above that of the patient. As he suggests, further investigation would be welcome.

L. J. DUNKIN,
Newcastle General Hospital,
Newcastle upon Tyne

REFERENCE

FACULTY OF ANAESTHETISTS
in the
ROYAL COLLEGE OF SURGEONS IN IRELAND

The President, Vice-President and Council of the Royal College of Surgeons in Ireland have inaugurated a Faculty of Anaesthetists. It is proposed to hold examinations for the Fellowship of the Faculty, but in the first instance the Council will award a limited number of Fellowships to senior Anaesthetists.

The minimum requirements of applicants will be that they should be holders of the Irish D.A. and have a further five years experience since passing the examination, or comparable experience.

Persons who wish their claims to be considered should send full particulars to the Registrar, Royal College of Surgeons in Ireland, St. Stephen's Green, Dublin, before September 1, 1959.

NORMAN RAE,
Registrar.